

Listing of Claims:

1. (Previously Presented) A reactant supply system for a fuel cell system having a fuel cell stack with an inlet stream and an exhaust stream, the reactant supply system comprising:

an apparatus for recirculating a reactant fluid stream of the fuel cell system, the apparatus comprising:

a common suction chamber fluidly connected to a suction inlet configured to receive a recirculated flow from the exhaust stream of the fuel cell stack;

a low-flow nozzle positioned in the common suction chamber and fluidly connected to a low-flow motive inlet configured to receive a first motive flow from a reactant source of the fuel cell stack;

a low-flow diffuser fluidly connected to a discharge outlet configured to provide the inlet stream to the fuel cell stack;

a high-flow nozzle positioned in the common suction chamber and fluidly connected to a high-flow motive inlet configured to receive the first motive flow from the reactant source; and

a high-flow diffuser fluidly connected to the discharge outlet;

a regulator, fluidly connected to, and interposed between, the reactant source of the fuel cell stack and the low-flow and high-flow motive inlets, for regulating the first motive flow to the apparatus; and

a first solenoid valve, fluidly connected to, and interposed between, the high-flow motive inlet and the regulator,

wherein the low-flow motive inlet is fluidly connected to the reactant source of the fuel cell stack such that, during operation of the fuel cell system, the first motive flow is directed to only the low-flow motive inlet when the first solenoid valve is closed and the first motive flow is directed to both the low-flow and high-flow motive inlets when the first solenoid valve is open.

2. (Previously Presented) The reactant supply system of claim 1, wherein the common suction chamber is substantially cylindrical.

3. (Previously Presented) The reactant supply system of claim 1, wherein the apparatus further comprises:

a low-flow one-way check valve for preventing flow regress through the low-flow diffuser; and

a high-flow one-way check valve for preventing flow regress through the high-flow diffuser.

4. (Previously Presented) The reactant supply system of claim 1, wherein:
the low-flow nozzle and low-flow diffuser are configured to entrain the recirculated flow and provide the inlet stream at low-load conditions; and

the high-flow nozzle and high-flow diffuser are configured to entrain the recirculated flow and provide the inlet stream at high-load conditions.

5. (Previously Presented) The reactant supply system of claim 4, wherein the apparatus further comprises:

a low-flow one-way check valve for preventing flow regress through the low-flow diffuser; and

a high-flow one-way check valve for preventing flow regress through the high-flow diffuser.

6. (Previously Presented) The reactant supply system of claim 1, wherein the apparatus further comprises:

an ultra-low-flow nozzle positioned in the common suction chamber and fluidly connected to an ultra-low-flow motive inlet configured to receive a second motive flow from the reactant source; and

an ultra-low-flow diffuser fluidly connected to the discharge outlet.

7. (Previously Presented) The reactant supply system of claim 6, wherein the common suction chamber is substantially cylindrical.

8. (Previously Presented) The reactant supply system of claim 6, wherein the apparatus further comprises:

a low-flow one-way check valve for preventing flow regress through the low-flow diffuser; and

a high-flow one-way check valve for preventing flow regress through the high-flow diffuser.

9. (Previously Presented) The reactant supply system of claim 8, wherein the apparatus further comprises an ultra-low-flow one-way check valve for preventing flow regress through the ultra-low-flow diffuser.

10. (Previously Presented) The reactant supply system of claim 6, wherein the low-flow nozzle and low-flow diffuser are configured to entrain the recirculated flow and provide the inlet stream at low-load conditions;

the high-flow nozzle and high-flow diffuser are configured to entrain the recirculated flow and provide the inlet stream at high-load conditions; and

the ultra-low-flow nozzle and ultra-low-flow diffuser are configured to entrain a portion of the recirculated flow and provide a portion of the inlet stream at idle-load conditions.

11. (Previously Presented) The reactant supply system of claim 10, wherein the apparatus further comprises:

a low-flow one-way check valve for preventing flow regress through the low-flow diffuser; and

a high-flow one-way check valve for preventing flow regress through the high-flow diffuser.

12. (Previously Presented) The reactant supply system of claim 10, wherein the apparatus further comprises an ultra-low-flow one-way check valve for preventing flow regress through the ultra-low-flow diffuser.

13. (Previously Presented) An electric power generation system comprising a fuel cell stack comprising a reactant stream inlet, a reactant stream outlet and at least one fuel cell;

a pressurized reactant supply;

a multiple ejector assembly, comprising:

a first motive flow inlet fluidly connected to the pressurized reactant supply,

a second motive flow inlet fluidly connected to the pressurized reactant supply,

a suction inlet, fluidly connected to the reactant stream outlet to receive a recirculated flow from the fuel cell stack, and

a discharge outlet, fluidly connected to the reactant stream inlet to provide an inlet stream to fuel cell stack;

a regulator, fluidly connected to, and interposed between, the pressurized reactant supply and the first and second motive flow inlets of the multiple jet ejector assembly, for regulating a first motive flow to the multiple jet ejector assembly; and

a first solenoid valve, fluidly connected to, and interposed between, the second motive flow inlet and the regulator,

wherein the first motive flow inlet is fluidly connected to the pressurized reactant supply such that, during operation of the electric power generation system, the first motive flow is directed to only the first motive flow inlet when the first solenoid valve is closed and the first motive flow is directed to both the first and second motive flow inlets when the first solenoid valve is open.

14. (Original) An electric power generation system comprising:
- a fuel cell stack comprising a reactant stream inlet, a reactant stream outlet and at least one fuel cell;
 - a pressurized reactant supply;
 - a multiple jet ejector assembly, comprising:
 - a first motive flow inlet fluidly connected to the pressurized reactant supply,
 - a second motive flow inlet fluidly connected to the pressurized reactant supply,
 - a suction inlet fluidly connected to the reactant stream outlet to receive a recirculated flow from the fuel cell stack, and
 - a discharge outlet, fluidly connected to the reactant stream inlet to provide an inlet stream to the fuel cell stack;
 - a regulator, fluidly connected to, and interposed between, the pressurized reactant supply and the first and second motive flow inlets of the multiple jet ejector assembly, for regulating a first motive flow to the multiple jet ejector assembly;
 - a first solenoid valve, fluidly connected to, and interposed between, the first motive flow inlet and the regulator;
 - a second solenoid valve, fluidly connected to, and interposed between, the second motive flow inlet and the regulator;
 - a by-pass line, fluidly connecting the pressurized reactant supply to the second motive flow inlet, for supplying a second motive flow to the multiple jet ejector assembly; and
 - a by-pass solenoid valve, fluidly connected to, and interposed in the bypass line between, the pressurized reactant supply and the second motive flow inlet.

15. (Original) The electric power generation system of claim 14, wherein:

the first motive flow inlet is fluidly connected to a first nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at high-load conditions; and

the second motive flow inlet is fluidly connected to a second nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at low-load conditions.

16. (Original) The electric power generation system of claim 14, wherein the regulator is a pressure control valve for regulating the pressure of the first motive flow to the multiple jet ejector assembly.

17. (Original) The electric power generation system of claim 16, further comprising a pressure transducer for detecting the pressure of the first motive flow to the multiple jet ejector assembly and for assisting in the operation of the first, second and by-pass solenoid valves.

18. (Original) The electric power generation system of claim 14, wherein the multiple jet ejector assembly further comprises a third motive flow inlet fluidly connected to the pressurized reactant supply.

19. (Original) The electric power generation system of claim 18, wherein:
the first motive flow inlet is fluidly connected to a first nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at high-load conditions;
the second motive flow inlet is fluidly connected to a second nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at low-load conditions; and

the third motive flow inlet is fluidly connected to a third nozzle and diffuser configured to entrain a portion of the recirculated flow and provide a portion of the inlet stream at idle-load conditions.

20. (Original) A method of operating the electric power generation system of claim 14, comprising:

during low-load operating conditions, opening the second solenoid valve and closing the first and by-pass solenoid valves, so that the first motive flow is directed to the second motive flow inlet; and

during high-load operating conditions, closing the second solenoid valve and opening the first and by-pass solenoid valves, so that the first motive flow is directed to the first motive flow inlet and the second motive flow is directed to the second motive flow inlet.

21. (Original) A method of operating the electric power generation system of claim 18, comprising:

during low-load operating conditions, opening the second solenoid valve and closing the first and by-pass solenoid valves, so that the first motive flow is directed to the second motive flow inlet;

during high-load operating conditions, closing the second solenoid valve and opening the first and by-pass solenoid valves, so that the first motive flow is directed to the first motive flow inlet and the second motive flow is directed to the second motive flow inlet; and

during all operating conditions, directing a third motive flow from the pressurized reactant supply to the third motive flow inlet.

22. (Original) An electric power generation system comprising:

a fuel cell stack, comprising a first reactant stream inlet configured to receive a first inlet stream, a second reactant stream inlet configured to receive a second inlet stream, a first reactant stream outlet and at least one fuel cell;

a pressurized reactant supply;

a multiple jet ejector assembly, comprising:

a suction inlet, fluidly connected to the first reactant stream outlet to receive a recirculated flow,

a discharge outlet, fluidly connected to the first reactant stream inlet to provide the first inlet stream,

a first motive flow inlet fluidly connected to the pressurized reactant supply, and

a second motive flow inlet fluidly connected to the pressurized reactant supply;

a first pressure regulator, fluidly connected to, and interposed between, the pressurized reactant supply and the first motive flow inlet, for regulating the pressure of a first motive flow to the first motive flow inlet, wherein the first pressure regulator is configured to maintain the pressure of the first inlet stream, in relation to the pressure of the second inlet stream, at a substantially constant first pressure differential; and

a second pressure regulator, fluidly connected to, and interposed between, the pressurized reactant supply and the second motive flow inlet, for regulating the pressure of a second motive flow to the second motive flow inlet, wherein the second pressure regulator is configured to maintain the pressure of the first inlet stream, in relation to the pressure of the second inlet stream, at a substantially constant second pressure differential,

wherein the first pressure differential is different from the second pressure differential.

23. (Original) The electric power generation system of claim 22, wherein:

the first motive flow inlet is fluidly connected to a first nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at high-load conditions;

the second motive flow inlet is fluidly connected to a second nozzle and diffuser configured to entrain the recirculated flow and provide the inlet stream at low-load conditions; and

the first pressure differential is less than the second pressure differential.

24-27. (Cancelled)